LOUISVILLE NAVAL SURFACE WARFARE CENTER
LOUISVILLE, KENTUCKY

Engineering Field Division/Activity: SOUTHDIV
Major Claimant: COMNAVSEASYSCOM
Size: 146 Acres
Funding to Date: $2,638,000
Estimated Funding to Complete: $29,792,000

Base Mission: Engineering support of conventional and electronic warfare systems; production of missile hardware, gun barrels, electronic components and parts for warfare systems

Contaminants: Acid, heavy metals, paint, POLs, solvents, ash, plating waste

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	9	High:	3	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	6
RCRA UST:	0	Low:	0		
Total Sites:	9				

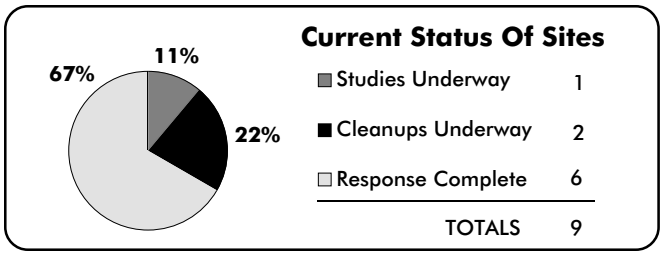
BRAC IV

Sites Response Complete: 6

EXECUTIVE SUMMARY

Naval Surface Warfare Center Ordnance Station, (NAVSURFWARCEN ORDSTA), Louisville is a highly industrialized facility located on 143 acres of land within the city limits of Louisville, Kentucky, seven miles south of the center of downtown and one-half mile from Louisville International airport. Its primary functions are to overhaul, procure and produce weapon systems and components needed by combat vessels of the Navy. Typical NAVSURFWARCEN ORDSTA operations that contributed to the contaminated sites on the installation include machining, assembling, overhauling and refurbishing of gun mounts and other Naval ordnance equipment, and supporting research, design, development and testing. Support operations include machining, welding, draining of lubricating fluids, painting, electroplating, degreasing and cleaning, and paint stripping. The NAVSURFWARCEN ORDSTA includes the following site types: waste storage areas, plating shop areas and disposal areas. Current operations include pollution prevention technologies to prevent further contamination. The installation has renewed their RCRA Part B permit, which includes corrective action requirements to clean up the contaminated sites.

The installation is discontinuously underlain with a layer of weathered shale and clay over bedrock composed of layers of shale and limestone. There is a semi-perched aquifer in the upper layer of clay with leakage into lower water bearing zones. Contaminants appear to have migrated downward through the soil layer to the groundwater. The clay layer may not be continuous or an effective barrier to contaminant migration to aquifers in the lower bedrock formations, although further study is needed to investigate this. Due to the station's developed character, rain and snowfall result primarily in surface runoff. Surface runoff is a possible migration pathway for contamination from the station's sites. The runoff is carried by a series of manmade drainage channels to the municipal combined sewer system. A portion of the runoff drains off-site to a series of drainage ditches discharging to area streams, eventually flowing into the Ohio River. These off-base drainage ditches throughout the area are polluted from a number of off-site industrial sources. Terrestrial wildlife on the base is generally typical of urban areas. During a wildlife survey conducted in June 1990, rock doves and mourning doves were observed in the vicinity of the base buildings. Species observed in the limited areas of natural vegetation on the base include starlings, common grackles, house sparrows, and gray squirrels. Other species of wildlife expected to occur on the base include raccoons, house mice, other mice, Norway rat, and eastern garter snake. Drinking water is supplied by a municipal water supply system.



To better inform the public of the environmental cleanups underway at the station, a Restoration Advisory Board (RAB) was established in January 1996 and the Community Relations Plan was published in July 1996. In January 1996, an Information Repository was set up on the base in Building 134 and is accessible to the public.

Of the six original sites at Louisville NAVSURFWARCEN ORDSTA, all are Response Complete (RC). Three of the six sites (Site 2, 3 and 5) listed RC are also listed as Site Close Out (SCO) following the Initial Site Assessment (IAS) in FY86. A fourth site (Site 1) received SCO in FY91. The other two sites (Sites 4 and 6), since they were being evaluated by the RCRA Facility Assessment (RFA), were classified RC for tracking purposes. A final RFA was published in May 1996. Sixty-nine SWMUs and eighteen AOCs were identified in the RFA. Nine SWMUs and two AOCs were recommended for RCRA Facility Investigation (RFI) while 33 SWMUs and 14 AOCs were recommended for confirmatory sampling. In FY97, the preliminary results will allow for multiple SWMUs and AOCs to be placed into the official IR program as Sites and SWMUs. In March 1997 the Commonwealth of Kentucky added an additional SWMU, bringing the total number of sites to 70.

Louisville NAVSURFWARCEN ORDSTA was recommended for privatization/closure by the 1995 Base Realignment and Closure (BRAC) commission. The base was privatized 18 August 1996. Of the 1,800 or so employees who worked at the station before going on the BRAC list, about 1,000 remained after privatization. Of the original 1,800 employees 650 moved or retired, 150 lost jobs, 410 remained navy employees at the base, and 585 became employees of private contractors. Approximately 180 of the 410 Navy employees will remain for only up to 15 months for operational closure. Also the appropriate functions, equipment and support remained for privatization.

LOUISVILLE NSWC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The area is underlain by a thin zone of very fine grained unconsolidated sediments on a soft and weathered shale. The very flat ground results in poor natural drainage conditions and large areas of standing water after rainfall or snow melt. Manmade drainage channels were constructed throughout the area to increase the usability of the land surface. The primary hydrogeologic unit in the area is glacial outwash sediment composed of unconsolidated gravels, sands, silts and clays. This outwash sediment located west of NAVSURFWARCEN ORDSTA comprises the upper aquifer material in the general area. Beneath the outwash sediments, the bedrock is composed of several limestone and shale formations. Aquifers in these formations do provide well water in the surrounding areas, however, most of the drinking water is provided by a municipal water supply. Under the installation, the outwash sediment has been found in some areas and in other areas is a surficial layer (5 to 10 feet) of clay and silt derived from terraces deposits (glacio-fluvial) and the weathering of the underlying shale. This layer consists of relatively low permeability materials.

Annual rainfall averages 44 inches and annual snowfall averages 16 inches. The area is subject to cyclonic storms and thunderstorms with intense rainfall. The area is highly industrialized and surface water drainage is through a series of manmade ditches and storm drains that discharge eventually into the local combined storm water/sewer system and enter the Metropolitan Sewer District system. Along the northeast and eastern portion of the station, the surface runoff drains off-site, merging with runoff from the local area and entering nearby streams that eventually empty into the Ohio River. This surface drainage route is a potential migration pathway for contaminants from the station.

Surface water drainage could potentially carry contaminants into the perched aquifer. Migration potential to the lower aquifers has not yet been defined.

NATURAL RESOURCES - Terrestrial wildlife on the base is generally typical of urban areas. During a wildlife survey conducted in June 1990, rock doves and mourning doves were observed in the vicinity of the base buildings. Species observed in the limited areas of natural vegetation on the base include starlings, common grackles, house sparrows, and gray squirrels. Other species of wildlife expected to occur on the base include raccoons, house mice, other mice, Norway rat, and eastern garter snake. Drainage ditches in industrial areas adjoining the base are reported to support a poorly diverse aquatic fauna indicative of polluted water. Flow from these ditches ultimately reaches the Ohio River by way of Northern Ditch, Southern Ditch, Pond Creek, and Salt River. No federal or state designated threatened, endangered, or special status plant or animal species or critical habitat were known to occur on NAVSURFWARCEN ORDSTA as of 1990. The state endangered Kirtlands snake, state species of concern Cooper's Hawk, and federally endangered Indiana bat are known to occur within a 50-mile radius of the base. Due to the lack of suitable habitat, none of these species likely occur on the base. A 3 June 1996 letter from the Department of the Army , U.S. Army Engineer District, Louisville, Corps of Engineers found, based on information provided and a site visit on 16 May, 1996, no jurisdictional wetlands exist on the base.

RISK - Of the six original sites at Louisville NAVSURFWARCEN ORDSTA, only Site 6 has been ranked "high" using the DOD Relative Risk Ranking model. Although, groundwater is the media receiving the ranking, the migration pathway for the contaminants was only potential, not evident. The high ranking indicates there is a strong potential for the plating shop contaminated wastes to enter the groundwater.

REGULATORY ISSUES

LEGAL AGREEMENTS - The station was issued a RCRA Part B permit on 30 October 1985. A draft RCRA Part B with corrective action requirements (for renewal) was submitted for public comment on 05 August 1996. An initial search identified 69 Solid Waste Management Units (SWMUs) and 18 Areas of Concern (AOC's). Of these, nine SWMUs and two AOC's were recommended for a RFI. SWMU #1, Northeast Corner Liquid Disposal Area, SWMU. #2, Old Station Landfill, SWMU #22, 1972 to 1976 Drum Storage Area, SWMU #23, Former Building C Drum Storage Area, SWMU #25, Waste Oil Tank 95 Drum Staging Area, SWMU #26, Waste Oil Tanks 98 and 61 Drum Staging Area, SWMU #37, Former Wastewater Treatment System, SWMU #51, Station Salvage Yard SWMU #53, Building E-Former Plating Building, AOC B, Building 81 Release Area and AOC F, Building B Excavation Area. Recommendations for the remaining 60 SWMUs and 16 AOCs were as follows: No Further Action (NFA) at the present time for 29 SWMUs and 2 AOCs; confirmatory sampling to determine if further action would be necessary for 33 SWMUs and 14 AOCs; and the remaining SWMU was determined to be a RCRA regulated unit under the permit. Since the permit renewal included all the sites on base (RCRA Facility Assessment and BRAC process), all site cleanups will be handled under the RCRA Corrective Action Program.

PARTNERING - In January 1996, an Environmental Restoration Management Alliance (ERMA) team was formed, made up of Navy Remedial Project Managers (RPMs) from NAVSURFWARCEN ORDSTA and Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Region 4 EPA regulator (on BRAC Cleanup Team (BCT)), Commonwealth of Kentucky representatives (on BCT), the BRAC Environmental Coordinator (BEC), CLEAN and RAC contractors and installation personnel.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - The Restoration Advisory Board (RAB) was established in January 1996 and has met every month since. In August 1997 tha RAB decided to meet quarterly.

COMMUNITY RELATIONS PLAN - The Community Relations Plan was completed in July 1996.

INFORMATION REPOSITORY - In January 1996, an Information Repository was established and is located on the base in Building 134 to provide public access to all environmental documents. The Administrative Record (the official file) is also housed in this building. Also, an Information Repository/Administrative Record has been established at the Iroquois Public Library.

BASE REALIGNMENT AND CLOSURE

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BRAC - Louisville NAVSURFWARCEN ORDSTA was recommended for privatization/closure by the 1995 BRAC commission. The base privatized 18 August 1996. Of the 1,800 or so employees who worked at the station before going on the BRAC list, about 1,000 remained after privatization. Of the original 1,800 employees 650 moved or retired, 150 lost jobs, 410 remained navy employees at the base, and 585 became employees of private contractors. Approximately 180 of the 410 Navy employees will remain for only up to 15 months for operational closure. Also the appropriate functions, equipment and support remained for privatization.

LOUISVILLE NSWC
RELEVANT ISSUES

BRAC CLEANUP TEAM - In FY96, a BRAC Cleanup Team (BCT) was formed.

DOCUMENTS - An Environmental Baseline Survey (EBS) and a BRAC Cleanup Plan (BCP) contract was awarded 2 October 1995. A field survey for the EBS was completed 3 November 1995. The final EBS was completed in March 1996. A BCP is scheduled for 1 November 1996.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
75 acres	6 acres	1 acre	1 acre	0 acres	1 acre	62 acres

REUSE - A Base Reuse Plan was completed in April 1996 by the Louisville/Jefferson County Redevelopment Authority (LJCRA).

HISTORICAL PROGRESS

FY86

Sites 1-5 - An Initial Assessment Study (IAS), similar to a Preliminary Assessment (PA), was completed in July 1986. The IAS identified five sites, and only one was recommended for further study. However, both Sites 1 and 4 proceeded to the Site Inspection (SI) phase.

FY91

Sites 1, 4 and 6 - An SI Report was published 13 May 1991. Of the sites to continue to the SI phase, one (Site 1) was determined to require no further study. Site 4, the Northeast Corner Liquid Disposal Area sample results showed low levels of metals and volatile organic solvents such as TCE, DCE and acetone. A risk assessment concluded none of the low levels represented a risk to workers on the site. An additional site was identified during the SI phase, Site 6, the Building E Plating Shop.

FY93

Site 6 - An SI report was published on 6 January 1993. At Site 6, Building E Plating Shop, high concentrations of organic compounds were detected in the soil and groundwater. The report recommended further study in the Remedial Investigation (RI) phase.

FY94

Site 6 - Site 6 (Building E), the only site to have Relative Risk Ranking, was ranked "high" due to contamination of groundwater. The Remedial Investigation/Feasibility Study (RI/FS) phase for Building E was stopped and the investigation was grouped in with a base wide RCRA Facility Investigation (RFI). Site went RC.

FY95

SWMUs and AOCs- The field survey for an RFA was completed.

FY96

Basewide - An Information Repository and RAB were established. The EBS and BCP abstract were completed. A FOSL was completed and 110 of 143 acres privatized by a lease. The Final Comprehensive Workplan, Final Master Health and Safety Plan and Final Community Relations Plan were completed.
SWMUs - Final RFA was completed (defined 69 potential SWMUs and 18 potential AOCs). Draft Part B Permit with corrective action requirements renewal.
Zones 1 and 2 - Final Sampling and Analysis Plans for ZONE 1 (Main Industrial Area containing the permitted facility, 9 SWMUs and 2 AOCs requiring RFI, 29 SWMUs and 14 AOCs requiring conformation sampling) and ZONE 2(Building 102 Area containing 4 SWMUs requiring conformation sampling). Field sampling began. When sampling is analyzed in FY97, new sites will be identified and placed into the official IR program. FY96 focused only on privatization and the BCT did not have time to evaluate the RFA for this purpose.

PROGRESS DURING FISCAL YEAR 1997

FY97

Basewide - BCP will be completed. BCP will continue to be modified once a fiscal year. The BCP abstract will be modified twice a fiscal year. Completed round one Field Sampling in December 1996. Data validation was completed in February 1997. Draft and Final RFI Report were combined into a Round 1 Findings Report which was initiated in July 1997. The USGS conducted a hydrogeologic study of the facility.

SWMU 7 - Interim Action decon of less than 90 day storage area
SWMU 31, 32, 39, 40, 59E and AOC K - Interim action to clean/repair/upgrade
SWMU 27, 28, 29 and 36 - Iinterim action to decon or remove
AOC 1 - Work was also initiated on repairing breaks in the combined sewer system.

PLANS FOR FISCAL YEARS 1998 AND 1999

Basewide - Continue to modify the BCP and BCP abstract. Evaluate the Round 1 data and prepare a Round 2 Sampling and Analysis Plan. Logically group sites for a more streamlined investigation. Apply risk-based cleanup criteria. The Navy will assess the natural attenuation parameters in the groundwater. Start field effort for round two sampling. Conduct various interim measures.

LOUISVILLE NSWC
PROGRESS AND PLANS

CERCLA	FY96 and before	FY97	FY98	FY99	FY00	FY01	FY02	FY03 and after
PA / SI	9							
RI / FS		2	1					
RD			3					
RAC			1	2				
RAO								3
IRA				1(1)	2(2)			
RC	6							3
Cumulative % RC	67%	67%	67%	67%	67%	67%	67%	100%